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| 10/606,706 | 06/25/2003 | Eiki Yasukawa | 03248C/HG | 5090 |

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NEW YORK, NY 10001-7708

EXAMINER

MERCADO, JULIAN A

| | |
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| ART UNIT | PAPER NUMBER |
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1745

DATE MAILED: 07/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,706

Applicant(s)

YASUKAWA ET AL.

Examiner

Julian Mercado

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 1,2,5-7,16 and 17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 3,4,8-15 and 18-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/04, 6/03
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Claims 1, 2, 5-7, 16 and 17 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on April 26, 2006.

Applicant's election with traverse of claims 3, 4, 8-15, 18-30 in the reply filed on April 26, 2006 is acknowledged. The traversal is on the ground(s) that the grouping of the claims should be as indicated on page 4 of the reply. The examiner concedes with the claim grouping insofar as the elected Group (b), indicated in the restriction requirement as encompassing a non-aqueous solvent of (a1), (b1) and (c1), is more properly represented by the following composition: "a" ("a1" and/or "a2") + "b1" + ("c1" and/or "c2"). The examiner further notes that the composition of the electrolyte for elected Group (b) as listed on page 4 appears to have omitted compounds ("c1" and/or "c2") while this component is clearly within the claimed scope of the elected group, as represented by independent claim 3.

Applicant's further election of species, if deemed necessary, is acknowledged. At present, however, the elected claims will be given its broadest reasonable interpretation consistent with the Markush-type claim language presently recited.

Information Disclosure Statement

The information disclosure statements (IDS) submitted on February 9, 2004 and June 25, 2003 have been considered by the examiner with the following exceptions:

1. JP 58-206078 appears to have been submitted with a partial (truncated) abstract.

Please submit the abstract in its entirety.

Claim Objections

Claims 8, 12 and 30 are objected to because of the following informalities:

1. In claim 8 at line 3, it is suggested to change "selected from" to --selected from the group consisting of--, in order to more properly recite a Markush-type limitation (such, for example, recited in claim 10 line 3)
2. Claim 30 at line 6 and line 7 (both instances) recites a similar limitation to claim 8 and is objected to under the same grounds.
3. In claim 12 at lines 3-4, it is suggested to change "ethyelne carbonate" to --ethylene carbonate--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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Claims 8, 11 and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 8, 11 and 12 presently depend from a non-elected claim (claim 7). Thus, the scope of claims 8, 11 and 12 are indefinite, though it is noted that in reciting compounds (b1) and (b2) in the alternative the claims are co-extensive in scope with elected Group (b) with respect to the former compound. If applicant intends to amend the dependency of claims 8, 11 and 12 so as to depend from claim 3, it is further suggested to amend claim 3 by changing "(b1) a cyclic carbonate" to -- (b) at least one compound selected from the group consisting of (b1) a cyclic carboxylate and (b2) a cyclic carbonate--.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 3, 4, 8-15, 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by Tan et al. (JP 11-260401)

Regarding claims 3, 4, 11-15, 18 and 19, Tan teaches a lithium secondary battery having a phosphate compound (a) in both chain (a1) and cyclic (a2) forms, a cyclic carboxylate compound (b1) such as gamma butyrolactone and a compound (c1) of a vinylene carbonate derivative. See Formula 4, par. [0033] and Formula 1, respectively. The compound (a) is

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disclosed at 3-25% by volume. See par. [0026]. As to a weight % of 0.1 to 15 for (c1), it is noted that the solvent is disclosed at 10 to 99% by volume with preference for 80 to 97%. See par. [0031] As an example, this solvent may be ethylene carbonate, which has a molecular weight of 88, while vinylene carbonate has a molecular weight of 86. As an example, therefore, the solvent at 97% with the compound (c1) at 3% and given their respective molecular weights, the compound (c1) is calculated at 0.03% by weight which is within the instant range.

For claims 8-10, it is noted that in claim 8, the compound (a) in an amount of 60 to less than 100% by volume is understood as being relative to the amount of cyclic carboxylate or cyclic carbonate, i.e. "based on the total volume of said phosphate (a) and said at least one compound selected from the cyclic carboxylate (b1) and the cyclic carbonate (b2)." That is, the claimed volume of the phosphate compound (a) is understood as being relative the volume of compound (b) and not the final volume of the mixture. Thus, as the patentees teach a volume % of "one to 40%" (see par. [0026]), the corresponding amount of compound (b) would naturally fall between 99 to 60% compounds. As an example, the resultant ratios between (a) and (b) is calculated as 66% at the latter extreme.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 20-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al. in view of Sonobe et al. (U.S. Pat. 5,527,643) and Kameda et al. (U.S. Pat. 6,632,569 B1)

The teachings of Tan et al. are discussed above.

At the outset, claims 22 and 23, drawn to a process-of-making limitation, have not been given patentable weight as such features fail to further limit and/or give patentable meaning to the claimed product. Notwithstanding, the claimed product appears to be the same or similar to the prior art product insofar as being a carbonaceous anode material. In the event that any differences can be shown by the product of the product-by-process claims 22 and 23 such differences would have been obvious to the skilled artisan as a routine modification of the product absent of a showing of unexpected results. *In re Thorpe*, 227 USPQ 964 (Fed. Cir. 1985).

Regarding claims 20, 21, 24 and 25, Tan et al. further teaches that the lithium battery comprises carbon material such as graphite, *inter alia*. See par. [0040] While Tan et al. does not explicitly teach this graphite carbonaceous material to have a first plane spacing d_{002} value, or a second carbonaceous material to have a second plane spacing d_{002} value, Sonobe et al. teaches a first graphite material to have a d_{002} value exceeding 0.350 nm and a second carbonaceous material to have a d_{002} value in the range of 0.336-0.345, i.e. less than the claimed 0.337 to the extent that this range overlaps therewith. See Sonobe et al. in col. 4 line 13 et seq. Thus, the skilled artisan would find obvious to modify Tan et al.'s invention by employing the instant plane spacing values for a first and second carbonaceous material. The motivation for such a modification would be to enhance the doping/de-doping capacity of the battery. See Sonobe et al. in col. 2 line 11 et seq.

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Regarding claims 26-27 and the instant intensity ratio, as the graphite disclosed by the prior art is identical to that disclosed and claimed by applicant for the reasons discussed in the immediately preceding paragraph, it would naturally flow to inherently have the same intensity ratio as claimed, absent of a showing by applicant that the claimed invention distinguishes over the reference. Similarly, as to the instant R value, Kameda et al. is relied upon to teach or at least suggest that as the crystallite size (L_c) is larger, the R value is smaller. See Kameda et al. in col. 8 line 37 et seq. Thus, the skilled artisan would find without undue experimentation that the claimed R value would naturally flow as an inherent property *per se*, absent of a showing by applicant that the claimed invention distinguishes over the reference. *In re Best*, 195 USPQ at 433, footnote 4 (CCPA 1977) and *In re Spada*, 15 USPQ 2d 1655 (Fed. Cir. 1990)

Claims 28-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tan et al. in view of Sonobe et al. and Kameda et al., and further in view of Watanabe et al. (U.S. Pat. 6,682,856 B1)

The teachings of Tan et al., Sonobe et al. and Kameda et al. are discussed above.

Tan et al. does not explicitly teach the claimed surface area or particle diameter for the carbonaceous material, or a metal selected from Sn, Si and Al. However, Watanabe et al. teaches a surface area of 1 to 10 m²/g and an alloy containing Al, *inter alia*. See col. 5 line 47 et seq. and col. 6 line 18 et seq. The skilled artisan would find obvious to further modify Tan et al.'s invention for reasons such as employing an anode material suitable and chemically stable for absorbing lithium ions. See col. 6 lines 14-50.

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Conclusion

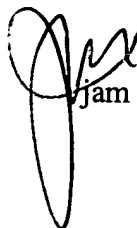
The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Pat. 6,664,008 B1 to Suzuki et al., U.S. Pat. 5,527,643 to Sonobe et al. and U.S. Pat. 5,385,794 to Yokoyama et al. are cited of cumulative relevance.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julian Mercado whose telephone number is (571) 272-1289. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan, can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.



jam



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